

37. SOME OBSERVATIONS ON THE BIOLOGY OF *ACALLOPISTUS* SPECIES (COLEOPTERA : CURCULIONIDAE) ON *ABUTILON INDICUM*

(With two plates)

Acallopiustus sp. (Subfamily Anthonomi nae) is a pest of the common weed *Abutilon indicum*. The biology of some species of Anthonominae has been studied and Burke (1976) has reviewed the previous work. However, there is no report on the life cycle and other aspects of the *Acallopiustus* species, the details of which are included in this communication.

OBSERVATIONS AND DISCUSSION

Acallopiustus sp. (Plate 1, figs. 1,2) attacks the common weed *Abutilon indicum* (Family Malvaceae). The fruits of *A. indicum* are carcerulus in which false septa appear in the ovary so that at maturity each loculus contains three seeds. The number of chambers around the thalamus varies from 14-19 among different fruits (Plate 1, fig. 3).

The adults appear on the host plant in large numbers during September-October. They feed on leaves, floral parts and the young developing fruits (Plate 1, figs. 4, 5).

Copulation: Copulation commences after the weevils have fed for 4-5 days. Mating occurs mostly during the afternoons, when several pairs in coitus are found within partially open buds or on the petals. Before copulation, when a wandering male encounters a female, it strikes its antennae against her body and immediately mounts her body. The male then moves forward and rubs its snout on her pronotum and occasionally taps it with its antennae. After this, the male slides back, extrudes its aedeagus and establishes genital connection (Plate 1, fig. 6). The copulating pair remains stationary throughout the act. A non-receptive female pushes away the male with her hind legs. The time spent in copulation varies from 4.2-14.57 hours.

Oviposition: Egg laying starts 2 to 5 days after the first mating. The female deposits eggs inside the fruit by choosing a place near the base of the fruit (Plate 1, fig. 7). She makes a circular hole in the pericarp with the help of the snout and then turns around to apply the tip of the abdomen against the hole. After a few seconds, the tip of the abdomen is raised and lowered two to three times and an egg is deposited inside the loculus. The female deposits one egg per chamber but all the chambers do not contain

eggs. Six to nine eggs have been recorded from one fruit. Similar oviposition behaviour has been recorded in other anthonomids which infest fruits and galls (Burke 1976). The oviposition hole is plugged with a yellowish secretion, secreted by the female. List (1932) has studied a similar habit in *Tachypterellus censors cera*. The females lay 6-78 eggs (average 42.2) per female.

Life cycle: Freshly laid eggs are oval, cream, shining and semi-opaque, each measuring 0.59 x 0.37 mm (Plate 2, fig. 8). The eggs hatch in 6 to 8 days (temp. 26-30°C and R.H. 49-65%). The young larva is whitish cream, with dark brown head (Plate 2, fig. 9). It burrows into the developing seed (Plate 2, fig. 10) and moults twice before attaining maturity (Plate 2, figs. 11, 12). The larva at this stage becomes more active and feeds more rapidly on the adjacent ovarian walls and seeds.

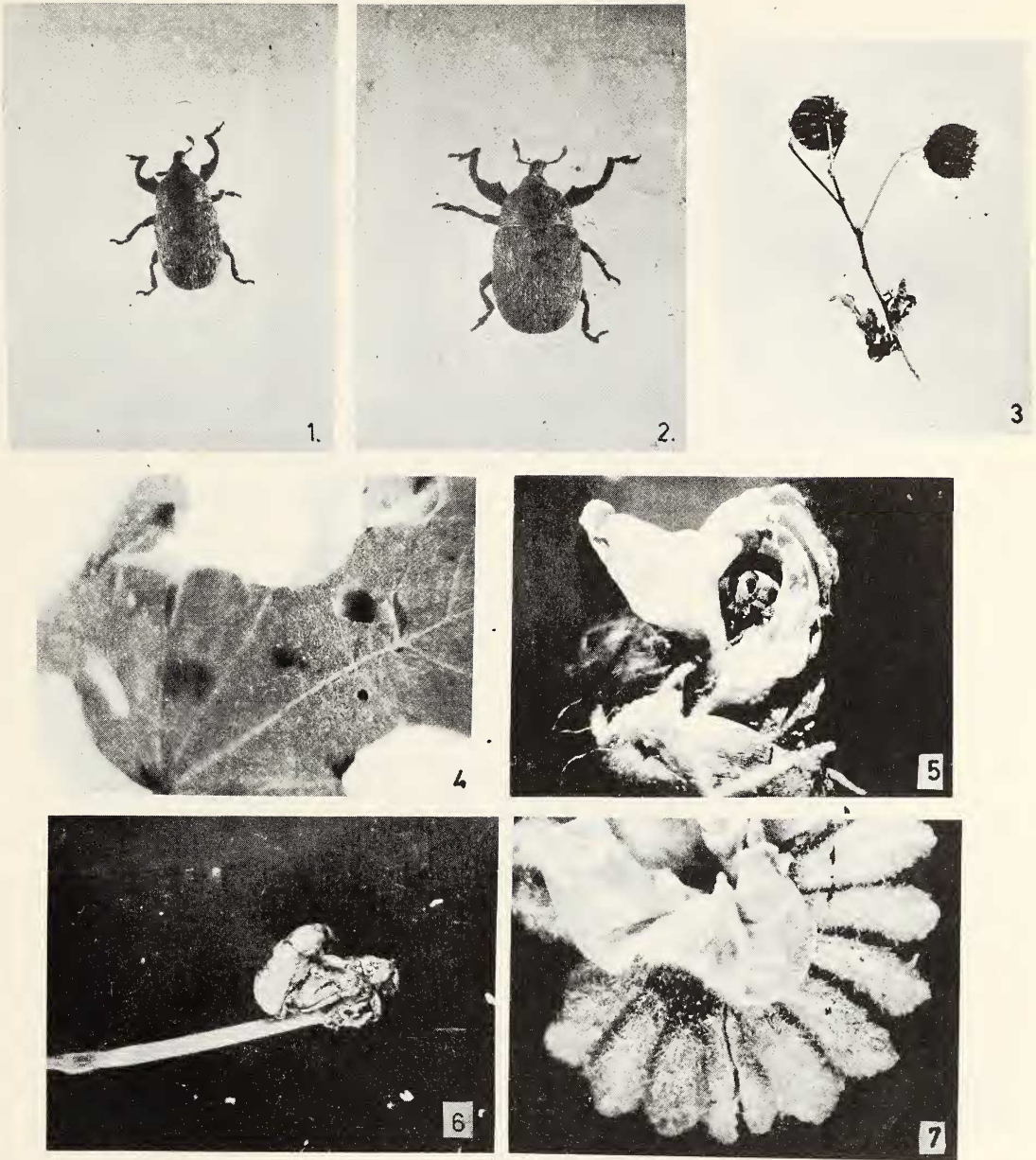
Pupation takes place within the fruit, as in other anthonomid weevils (Burke 1976). The mature larva constructs a chamber at the rear end of the ovary by cementing together the seed fragments and its faecal matter (Plate 2, fig. 13) and transforms into a pupa (Plate 2, fig. 14) in about seven days.

Most pupae transform into adults by the end of October. After eclosion, the adults remain inside the fruit for 5-9 days. During this period, hardening and darkening of the cuticle is completed. The adult ultimately escapes from the fruit by cutting a circular hole (Plate 2, fig. 15).

Number of generations: *Acallopiustus* sp. is a univoltine species with the adults showing up once in a year. These adults feed for about a month on the late flowers before moving to their hibernation sites, as do most other anthonominae weevils which develop on plants with annual flowering period (Burke 1976).

Nature and extent of damage: As already stated, the adult beetles have been observed to feed on the sepals and pollen of the flowers but the injury may reach to the outer walls of the ovary. It is chiefly the grubs which prove destructive to the fruits and usually consume all the seeds of the infested fruit.

The larvae of another weevil, *Apion (Thympion) majorinum* Fab. also inhabiting the thalamus of



Figs. 1-7. *Acallopistus* sp.

1. Male; 2. Female; 3. Adult hiding in the flower; 4. Adult consuming floral parts; 5. Damaged leaf with incised margins; 6. Copulation; 7. Fruit of *Abutilon indicum* with two ovipunctures.